Space Weather Forecast

Issued on Wednesday, 05 January 2022 at 12:31 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Mainly quiet conditions, chance of minor geomagnetic activity over the weekend.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Very Low over the past 24 hours, with only minor flares observed. There are two sunspot regions on the visible disc. These are both currently small and simple regions, located in the bottom-left quadrant of the disc. No Earth-directed Coronal Mass Ejections (CMEs) have been observed in the available imagery.

Solar Wind / Geomagnetic Activity: Solar winds were slightly elevated through the period, but nominally slow, ambient and featureless. The strength of the magnetic field carried by the wind remained weak, with no notable southward deflections in the north-south direction. Geomagnetic activity was Quiet.

Energetic Particles / Solar Radiation: The count of energetic particles (high energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Mostly Very Low solar activity is expected, with a chance of increasing to Low at times (Common-class flaring) from either of the sunspots currently on the disc. Through day 3 and into day 4 (7th and 8th January), a return of two old sunspot regions from the previous rotation will potentially increase activity bringing a slightly increasing chance of isolated Moderate-class flares.

Solar Wind / Geomagnetic Activity: There are currently no Earth-directed CMEs. Solar winds are expected to remain mainly slow and ambient until later on day 4 (8th), when winds are likely to pick up again in response to a fast wind from a coronal hole. Mainly Quiet geomagnetic conditions are therefore expected until then, then increasing to Unsettled to Active (Kp3-4) with a slight chance of G1/Minor storm intervals (Kp5) on day 4 (8th).

Energetic Particles / Solar Radiation: The count of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms anticipated in the absence of solar activity.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	5	25
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	1	2	5	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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